transparent sample tube (6). Diametrically opposed to orifice (5) is an orifice (8) which allows light to pass from the sample tube to a transmittance photocell (9). An orifice (11) is located at a fixed angle from orifice (8) and allows light to pass from the sample tube through a lens (12) to a scatter photocell (13). Conklin et al. also describe that the haze measuring apparatus includes a hinge (4b) and a clasp (4c) whereby discrete section (4) (sic) can be moved with respect to discrete section (4a), and that the invention can be used to measure a plurality of small samples or that the sample tube can be an integral part of a plant process stream and continuous measurement of such a stream would be possible. Conklin et al. further describe that the haze measuring apparatus includes a meter (21) or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. The mere assertion that such a method and apparatus would have been obvious to one of ordinary skill in the art does not support a prima facia obvious rejection. Rather, each allegation of what would have been an obvious matter of design choice must always be supported by citation to some reference work recognized as standard in the pertinent art and the Applicants given the opportunity to challenge the correctness of the assertion or the notoriety or reputation of the cited reference. Applicants have not been provided with the citation to any reference supporting the combination made in the rejection. The rejection, therefore, fails to provide the Applicants with a fair opportunity to respond to the rejection, and fails to provide the Applicants with the opportunity to challenge the correctness of the rejection. In addition, and contrary to the suggestion in the Office Action, Applicants submit that the claimed invention would not have been obvious to one of ordinary skill in the art.

Furthermore, and to the extent understood, Conklin et al. do not describe or suggest the presently pending claims. More specifically, Claim 1 recites an in-line particulate detector that includes "a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion

to a fuel consumer; a laser diode light source disposed within said housing for emitting a light beam within said inner flow portion; a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode; a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode; circuitry coupled to said first and second photodiodes to monitor the ratio of light intensities measured by said first and second photodiode to indicate the presence of particulate within an introduced fuel flow; and a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities."

Conklin et al. do not describe or suggest an in-line particulate detector that includes a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through the inner flow portion to a fuel consumer, a laser diode light source disposed within the housing, a first photodiode disposed within the housing, a second photodiode disposed within the housing adjacent the first photodiode, circuitry coupled to the first and second photodiodes to monitor the ratio of light intensities measured by the first and second photodiode to indicate the presence of particulate within an introduced fuel flow, and a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities. Moreover, Conklin et al. do not describe or suggest an in-line particulate detector that includes a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline. Nor does Conklin et al. describe or suggest a control structure inputted into a circuitry to initiate a system control based on the ratio of light intensities. Rather, Conklin et al. describe that an apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Conklin et al.

Claims 2-4 depend directly from independent Claim 1. When the recitations of Claims 2-4 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-4 likewise are patentable over Conklin et al.

Claim 23 recites an in-line particulate detector including "a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer; a means for emitting a light beam within said inner flow portion; a first means for detecting substantially full strength of an unimpeded light beam generated by said means for emitting; a second means for detecting a baseline level of unimpeded light beam generated by said means for emitting; a means for comparing the light intensities detected by said first and second means for detecting, to determine the presence of particulate within an introduced flow; and a control means for receiving from said comparing means a signal to initiate a system control based on the ratio of light intensities."

Conklin et al. do not describe or suggest an in-line particulate detector including a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer, a means for comparing the light intensities detected by a first and second means for detecting, to determine the presence of particulate within an introduced flow, and a control means for receiving from the comparing means a signal to initiate a system control. Moreover, Conklin et al. do not describe "a control means for receiving from the comparing means a signal to initiate a system control based on the ratio of light intensities." Rather, Conklin et al. describe that the apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze. For at least the reasons set forth above, Claim 23 is submitted to be patentable over Conklin et al.

Claims 24-26 depend directly from independent Claim 23. When the recitations of Claims 24-26 are considered in combination with the recitations of Claim 23, Applicants submit that dependent Claims 24-26 likewise are patentable over Conklin et al.

Claim 37 recites an in-line particulate detector including "a housing having an inner flow portion; which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer; a Laser diode light source disposed within said housing for emitting a light beam within said inner flow portion; a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode; a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode; circuitry coupled to said first and second photodiode to monitor the ratio of light intensities measured by said first and second photodiodes to indicate the presence of particulate within an introduced flow; and a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities."

Conklin et al. do not describe or suggest an in-line particulate detector including a Laser diode light source, a first photodiode, a second photodiode, circuitry coupled to the first and second photodiode to monitor the ratio of light intensities measured by the first and second photodiodes, and a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities. Moreover, Conklin et al. do not describe "circuitry coupled to the first and second photodiode to monitor the ratio of light intensities, and a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities" Rather, Conklin et al. describe that the apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze. For at least the reasons set forth above, Claim 37 is submitted to be patentable over Conklin et al.

Claim 38 recites an in-line particulate detector for insertion within a pipeline, wherein the detector includes "a laser diode light source to be disposed within said pipeline for emitting a light beam within an inner flow portion of said pipeline; a first photodiode to be disposed within said pipeline positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode; a second photodiode to be disposed within said pipeline adjacent said first photodiode positioned such that a baseline level of unimpeded generated light beam is detected by said second photodiode; circuitry coupled to said first and second photodiode to monitor the ratio of light intensities measured by said first and second photodiodes to indicate the presence of particulate within an introduced flow; and a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities."

Conklin et al. do not describe or suggest an in-line particulate detector including a Laser diode light source, a first photodiode, a second photodiode, circuitry coupled to the first and second photodiode to monitor the ratio of light intensities measured by the first and second photodiodes, and a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities. Moreover, Conklin et al. do not describe "circuitry coupled to the first and second photodiode to monitor the ratio of light intensities, and a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities." Rather, Conklin et al. describe that the apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze. For at least the reasons set forth above, Claim 38 is submitted to be patentable over Conklin et al.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejections of Claims 1-4, 23-26, 37 and 38 be withdrawn.

The rejection of Claims 5-9 and 27-31 under 35 U.S.C. § 103(a) as being unpatentable over Conklin et al. (U.S. Patent 3,358,148) in view of Infante (U.S. Patent 5,742,064) is respectfully traversed.

Conklin et al. is described above. Infante describes an optical detection system that includes a probe (5) connected to a pipe (10) in a slip stream configuration such that fluid (15) from the pipe is routed through the probe located outside the pipe. An optical waveguide is connected on one end to the probe and on the other end to an analyzer device (25) such as a spectrometer (35) for analyzing the wavelength of light through the waveguide. A computer is electrically coupled to the spectrometer to process the data received from the spectrometer and determine the amounts and types of impurities contained in the petroleum.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been obvious to one of ordinary skill in the art to modify Conklin et al. according to the teachings of Infante. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Rather, the present Section 103 rejection appears to be based on a combination of teachings selected from several patents in an attempt to arrive at the claimed invention. Specifically, Conklin et al. is cited for its teaching that an apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze, and Infante is cited for its teaching that a computer, electrically coupled to a spectrometer, can process data received from the spectrometer and determine the amounts and types of impurities contained in petroleum. Since there is no teaching or suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection be withdrawn.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such

references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Applicants respectfully submit however, that a closer examination of the prior art would reveal that the prior art teaches away from the present invention. More specifically, neither Conklin et al. nor Infante, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 5 has been cancelled. Claims 6-8 depend, either directly or indirectly, from independent Claim 1 which recites an in-line particulate detector that includes "a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer; a laser diode light source disposed within said housing for emitting a light beam within said inner flow portion; a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode; a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode; circuitry coupled to said first and second photodiodes to monitor the ratio of light intensities measured by said first and second photodiode to indicate the presence of particulate within an introduced fuel flow; and a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities."

Neither Conklin et al. nor Infante, alone or in combination, describe or suggest an in-line particulate detector that includes a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through the inner flow portion to a fuel consumer, a laser diode light source disposed within the housing, a

first photodiode disposed within the housing, a second photodiode disposed within the housing adjacent the first photodiode, circuitry coupled to the first and second photodiode to monitor the ratio of light intensities measured by the first and second photodiode to indicate the presence of particulate within an introduced fuel flow, and a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities. Moreover, neither Conklin et al. nor Infante considered alone or in combination, describe or suggest "circuitry coupled to the first and second photodiodes to monitor the ratio of light intensities measured by the first and second photodiode to indicate the presence of particulate within an introduced fuel flow and a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities." Rather, Conklin et al. describe that an apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze, and Infante describes that a computer electrically coupled to a spectrometer can process data received from the spectrometer and determine the amounts and types of impurities contained in petroleum. For at least the reasons set forth above, Claim 1 is submitted to be patentable over Conklin et al. in view of Infante.

Claim 5 has been cancelled, Claims 6-8 depend, either directly or indirectly, from independent Claim 1. When the recitations of Claims 6-8 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 6-8 likewise are patentable over Conklin et al. in view of Infante.

Claims 27-31 depend, either directly or indirectly, from independent Claim 23 which recites an in-line particulate detector including "a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer; a means for emitting a light beam within said inner flow portion; a first means for detecting substantially full strength of an unimpeded light beam generated by said means for emitting; a second means for detecting a baseline level of unimpeded light beam generated by said means for emitting; a means for comparing the light

intensities detected by said first and second means for detecting, to determine the presence of particulate within an introduced flow; and a control means for receiving from said comparing means a signal to initiate a system control based on the ratio of light intensities."

Neither Conklin et al. nor Infante, alone or in combination, describe or suggest an in-line particulate detector that includes a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer, a means for comparing the light intensities detected by a first and second means for detecting, to determine the presence of particulate within an introduced flow, and a control means for receiving from the comparing means a signal to initiate a system control. Moreover, neither Conklin et al. nor Infante considered alone or in combination, describe or suggest "a means for comparing the light intensities detected by a first and second means for detecting, to determine the presence of particulate within an introduced flow, and a control means for receiving from the comparing means a signal to initiate a system control." Rather, Conklin et al. describe that an apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze, and Infante describes that a computer electrically coupled to a spectrometer can process data received from the spectrometer and determine the amounts and types of impurities contained in petroleum. For the reasons set forth above, Claim 23 is submitted to be patentable over Conklin et al. in view of Infante.

Claims 27-31 depend, either directly or indirectly, from independent Claim 23. When the recitations of Claims 27-31 are considered in combination with the recitations of Claim 23, Applicants submit that dependent Claims 27-31 likewise are patentable over Conklin et al. in view of Infante.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejections of Claims 5-8 and 27-31 be withdrawn.

The rejection of Claims 15 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Conklin et al. (U.S. Patent 3,358,148) in view of Tanaka et al. (U.S. Patent 4,270,049) is respectfully traversed.

Conklin et al. is described above. Tanaka et al. describe a liquid leakage detection system that includes an oil detector cable (14) including a light guide (10') that is formed using a plurality of fiber optics each of which includes a light guide core (10) and a cladding (11) which is stranded or otherwise assembled and coated with a sheath (13) which serves to absorb oil. Tanaka et al. also describe a wireless transmission line in communication with a centralized monitor station wherein the incoming signal is applied to a comparator (21) and used to generate visual and audio alarms.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been obvious to one of ordinary skill in the art to modify Conklin et al. according to the teachings of Tanaka et al. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Rather, the present Section 103 rejection appears to be based on a combination of teachings selected from several patents in an attempt to arrive at the claimed invention. Specifically, Conklin et al. is cited for its teaching that an apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze, and Tanaka et al. is cited for its teaching that a liquid leakage detection system includes an oil detector cable, formed using a plurality of fiber optics, can generate a signal, and a wireless transmission line connected to a centralized monitor station wherein the incoming signal is used to generate visual and audio alarms. Since there is no teaching or suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection be withdrawn.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Applicants respectfully submit however, that a closer examination of the prior art would reveal that the prior art teaches away from the present invention. More specifically, neither Conklin et al. nor Tanaka et al., considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claim 15 recites an in-line particulate detector including "a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer; a laser diode light source disposed within said housing for emitting a light beam within said inner flow portion; a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode; a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode; circuitry coupled to said first and second photodiode to monitor the ratio of light intensities measured by said first and second photodiodes to indicate the presence of particulate within an introduced fuel flow; a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities; at least one remote unit for transmitting signals generated from said first and second photodiodes; a central station; and a communications link."

Neither Conklin et al. nor Tanaka et al., alone or in combination, describe or suggest an in-line particulate detector including a laser diode light source, a first photodiode, a second photodiode, circuitry coupled to the first and second photodiode to monitor the ratio of light intensities measured by the first and second photodiodes, and a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities. Moreover, neither Conklin et al. nor Tanaka et al. considered alone or in combination, describe or suggest "a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities." Rather, Conklin et al. describe that an apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze, and Tanaka et al. describe that a liquid leakage detection system that includes an oil detector cable that is formed using a plurality of fiber optics can generate a signal, and a wireless transmission line connected to a centralized monitor station wherein the incoming signal is used to generate visual and audio alarm. For at least the reasons set forth above, Claim 15 is submitted to be patentable over Conklin et al. in view of Tanaka et al.

Claim 16 depends directly from independent Claim 15. When the recitations of Claim 16 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claim 16 likewise is patentable over Conklin et al. in view of Tanaka et al.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejections of Claims 15-16 be withdrawn.

The rejection of Claims 17-22 under 35 U.S.C. § 103(a) as being unpatentable over Conklin et al. (U.S. Patent 3,358,148) in view of Tanaka et al. (U.S. Patent 4,270,049), and further in view of Lamensdorf (U.S. Patent 5,568,121) is respectfully traversed.

Conklin et al. and Tanaka et al. are described above. Lamensdorf describes a main monitoring station (10) that communicates with a plurality of remote attendants (12) through a conventional interface or modem (14) and a base station radio (16) through an antenna (18). Lamensdorf also describes that a gas detection interface (30) may be provided at the portable

attendant (12) to detect and measure the level of selected gases at the remote site. Where the presence or absence of specific gases is hazardous, an alarm is sounded at both the portable attendant and the main monitoring center.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been obvious to one of ordinary skill in the art to modify Conklin et al. according to the teachings of Tanaka et al. and Lamensdorf. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Rather, the present Section 103 rejection appears to be based on a combination of teachings selected from several patents in an attempt to arrive at the claimed invention. Specifically, Conklin et al. is cited for its teaching that an apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze, Tanaka et al. is cited for its teaching that a liquid leakage detection system that includes an oil detector cable that is formed using a plurality of fiber optics can generate a signal, and a wireless transmission line connected to a centralized monitor station wherein the incoming signal is used to generate visual and audio alarms, and Lamensdorf is cited for its teaching that a main monitoring station communicates with a plurality of remote attendants through a conventional interface or modem and a base station radio through an antenna and when the presence or absence of specific gases is hazardous, an alarm is sounded at both the portable attendant and the main monitoring center.

Since there is no teaching or suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection be withdrawn.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Applicants respectfully submit however, that a closer examination of the prior art would reveal that the prior art teaches away from the present invention. More specifically, none of Conklin et al., Tanaka et al., and Lamensdorf, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claims 17-22 depend, either directly or indirectly, from independent Claim 15 which recites an in-line particulate detector including "a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer; a laser diode light source disposed within said housing for emitting a light beam within said inner flow portion; a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode; a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode; circuitry coupled to said first and second photodiode to monitor the ratio of light intensities measured by said first and second photodiodes to indicate the presence of particulate within an introduced fuel flow; a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities; at least one remote unit for transmitting signals generated from said first and second photodiodes; a central station; and a communications link."

None of Conklin et al., Tanaka et al., and Lamensdorf, alone or in combination, describe or suggest an in-line particulate detector including a laser diode light source, a first photodiode, a second photodiode, circuitry coupled to the first and second photodiode to monitor the ratio of light intensities measured by the first and second photodiodes, and a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities. Moreover, none of Conklin et al., Tanaka et al., and Lamensdorf, considered alone or in combination, describe or suggest "a control structure inputted into the circuitry to initiate a system control based on the ratio of light intensities." Rather, Conklin et al. describe that an apparatus output can be observed on a meter or can be adapted to actuate either indicating or recording instruments of the electromechanical type to provide a visual measure of the relative severity of haze, Tanaka et al. describe that a liquid leakage detection system that includes an oil detector cable that is formed using a plurality of fiber optics can generate a signal, and a wireless transmission line connected to a centralized monitor station wherein the incoming signal is used to generate visual and audio alarm, and Lamensdorf describe that a main monitoring station communicates with a plurality of remote attendants through a conventional interface or modem and a base station radio through an antenna and when the presence or absence of specific gases is hazardous, an alarm is sounded at both the portable attendant and the main monitoring center.

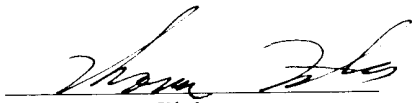
For at least the reasons set forth above, Claim 15 is submitted to be patentable over Conklin et al. in view of Tanaka et al., and further in view of Lamensdorf.

Claims 17-22 depend, either directly or indirectly, from independent Claim 15. When the recitations of Claims 17-22 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claims 17-22 likewise are patentable over Conklin et al. in view of Tanaka et al. and further in view of Lamensdorf.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejections of Claims 17-22 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



Thomas M. Fisher
Registration No. 47,564
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070

Express Mail No. EL 817714285

RD-25,934
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Anthony Dean et al.

Art Unit: 2877

Serial No.: 09/333,181

Examiner: Smith, Zandra V.

Filed: June 14, 1999

For: IN-LINE PARTICULATE DETECTOR

SUBMISSION OF MARKED UP CLAIMS

Box: AF
Hon. Commissioner for Patents
Washington, D.C. 20231

Submitted herewith are marked up claims in accordance with 37 C.F.R. 1.121(c)(1)(ii), wherein additions are underlined and deletions are [bracketed].

IN THE CLAIMS:

1. (twice amended) An in-line particulate detector comprising:

a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer;

a laser diode light source disposed within said housing for emitting a light beam within said inner flow portion;

a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode;

a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode; [and]

circuitry coupled to said first and second photodiodes to monitor the ratio of light intensities measured by said first and second photodiode to indicate the presence of particulate within an introduced fuel flow; and

a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities.

6. (once amended) An in-line particulate detector in accordance with Claim 1 [5], wherein said control structure is inputted into said circuitry by programming into memory of an application specific integrated circuit.

7. (once amended) An in-line particulate detector in accordance with Claim 1 [5], wherein said control structure is inputted into said circuitry by being embedded in the form of algorithms in one or more computers.

9. (once amended) An in-line particulate detector in accordance with Claim 1 [5], wherein said control structure is programmed in a language selected from the group of C, C++, Basic, MATLAB, and FORTRAN.

15. (twice amended) An in-line particulate detector comprising:

a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer;

a laser diode light source disposed within said housing for emitting a light beam within said inner flow portion;

a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode;

a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode; [and]

circuitry coupled to said first and second photodiode to monitor the ratio of light intensities measured by said first and second photodiodes to indicate the presence of particulate within an introduced fuel flow; [and]

a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities; and

at least one remote unit for transmitting signals generated from said first and second photodiodes;

a central station; and

a communications link.

23. (once amended) An in-line particulate detector comprising:

a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer;

a means for emitting a light beam within said inner flow portion;

a first means for detecting substantially full strength of an unimpeded light beam generated by said means for emitting;

a second means for detecting a baseline level of unimpeded light beam generated by said means for emitting; [and]

a means for comparing the light intensities detected by said first and second means for detecting, to determine the presence of particulate within an introduced flow; and

a control means for receiving from said comparing means a signal to initiate a system control based on the ratio of light intensities.

37. (twice amended) An in-line particulate detector comprising:

a housing having an inner flow portion; which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer;

a Laser diode light source disposed within said housing for emitting a light beam within said inner flow portion;

a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode;

a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode; [and]

circuitry coupled to said first and second photodiode to monitor the ratio of light intensities measured by said first and second photodiodes to indicate the presence of particulate within an introduced flow; and

a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities.

38. (twice amended) An in-line particulate detector for insertion within a pipeline, said detector comprising:

a laser diode light source to be disposed within said pipeline for emitting a light beam within an inner flow portion of said pipeline;

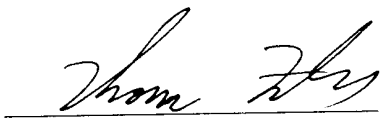
a first photodiode to be disposed within said pipeline positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode;

a second photodiode to be disposed within said pipeline adjacent said first photodiode positioned such that a baseline level of unimpeded generated light beam is detected by said second photodiode; [and]

circuitry coupled to said first and second photodiode to monitor the ratio of light intensities measured by said first and second photodiodes to indicate the presence of particulate within an introduced flow; and

a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities.

Respectfully Submitted,



Thomas M. Fisher
Registration No. 47,564
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070